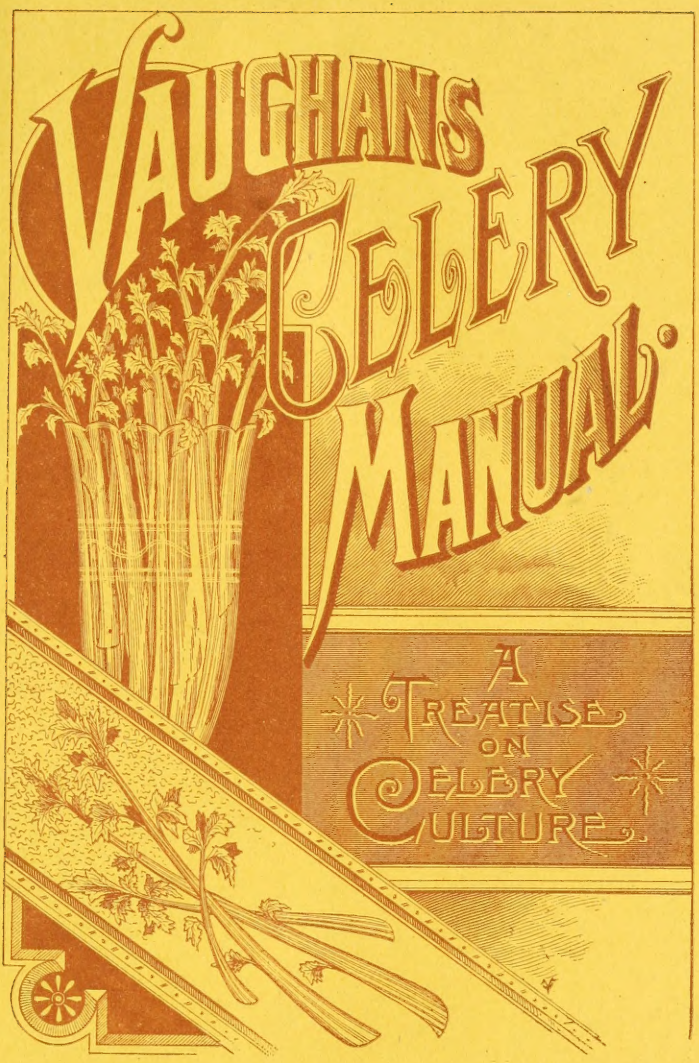
VAUGHANS CELERY MANUAL

A TREATISE ON CELERY CULTURE



VAUGHAN'S

CELERY MANUAL

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VAUGHAN'S SEED STORE.
CHICAGO.
1889.

PREFACE.

We are often consulted by those who would engage in gardening or plant growing and trust some may find in a careful study of these pages that answer which lack of time prevents our giving to individual cases. While in these times of close competition in every branch of labor or business we would not throw any false rosy light over the pursuit of gardening; while we would be the last to mislead the beginner who may harbor the idea that "anyone can be a gardener" yet we must claim for it a fair promise of reward for energy and brains. Let no one imagine that he needs but sow to reap; that fine crops and good prices for them are as sure from his ground as "grass grows and water runs," but know, that to be a good gardener is not less difficult than to be a good merchant, manufacturer, grocer or tradesman. The wise solution of the problem of creating wealth from the soil is not less difficult and requires no less time to learn than many other pursuits and he who thinks otherwise may learn the contrary at the end of sad and dear experiences. We know of no business so easy and profitable that unskilled labor may expect immediate success.

The Culture of Celery is no exception, it is perhaps a high branch of that "Art which doth mend Nature;" therefore act wisely, and by all the knowledge you can acquire from practical

men and despise not that knowledge because you find it written in books ; rather study wisely to marry the theory with the practice. This well done, the well-read man can never be scorned by his less educated but more practical brother worker. We know, however, of no branch of art where one by carefully following the instructions here given, may hope for greater return for his investment and labor.

To Mr. Burt Eddy, (a practical grower of twenty years experience) I am indebted for the thorough working details and systematic arrangements—in fact the authorship of this Manual, which I have supervised, illustrated and printed, with the hope that it may be some addition to the scant list of practical gardening essays.

J. C. VAUGHAN.

CHICAGO, MARCH 1, 1889.

CELERY (APIUM GRAVEOLENS) is a native of Britain, which in emigrating to America, has greatly improved its conditions. There is no doubt that here it is more widely and better grown than in its native land. As a wild plant its stem was about two feet high, its root long and tapering, its taste acrid and suggestive of poisonous qualities, while its odor was offensive. Now, by the evolution of superior culture, the stalks have grown solid, crisp, agreeably sweet and of a nutty flavor, while in one variety the roots are swollen into turnip-shaped bulbs. It has become an important factor of a good dinner-table, a flavorer of its soups, an ingredient of delicious salads, a boiled vegetable and a pretty, edible ornament. Through its remarkable development it has become an important commercial staple, requiring thousands of acres for its production and extensive shipping facilities for its distribution to all sections of of our wide continent. One center alone, the Kalamazoo Celery District, reports shipments for the past year of 20 and 30 and not infrequently 50 tons of this product daily during the eight months constituting its shipping season, and the end is not yet, the demand still increases; there is a continually widening field for development and a prospect that for years to come it will prove a profitable crop to engage the attention of cultivators.

Certain localities seem especially adapted to the successful culture of this crop and the growers learn certain economies common to operations of great magnitude. Yet we believe there is no section of our country so poor in advantages of soil and climate that a measure of success cannot be attained, and in most cases some spot near towns can be found where high success will reward intelligent management and labor. Even in sections of our Southern States where most unfavorable conditions exist, by following plans suggested on following pages, we believe good crops can be grown.

In our locality "doubling" this crop with early cabbage, lettuce, peas, beets, beans, potatoes or even sweet corn and onions secures the best possible returns from high-priced lands and costly manures, though many growers devote their whole ground to this crop alone and raise on it two and even three crops during the season. The

wide-spread impression that this is a difficult crop to grow—requiring mysterious ledgerdemain is fast being dispelled by practical experience in its growth and thorough information and advice from skillful growers imparted in essays and books.

Experience in our locality has taught us certain peculiar lessons which may be of interest and instruction to beginners or even old growers in other sections with differing soils and climates, since through interchange of ideas and experience do we often learn our most valued lessons. Some of the information may be hackneyed to experienced growers, yet we expect to illustrate certain practices that are not general and that have been very successful in one of the most noted regions where the crop is grown and where competition is the sharpest. A working experience in the manual operations of market gardening and knowledge gained in an extensive shipping trade, furnish us with actual facts and methods on which we can talk freely and familiarly, if not rhetorically, so that we hope to present the solid facts and pertinent points of our subject, making clear the essentials of the highest management of this branch of gardening.

In the beginning of our subject would we emphasize a reasonable rather than an enthusiastic expectation of profits. Theoretical figures frequently sum up differently from figures in fact. Seedtime and harvest often develop obstacles that are not in a pen and ink plan and which interfere greatly with proposed profits, yet it is reasonably sure that an industrious man, with proper facilities and small capital engaging in the culture of this specialty has a safe enterprise and a remunerative occupation.

SOILS AND DRAINAGE.

A proper seclection of soil is the first practical step to be taken in the production of any crop; you can more easily construct the proverbial "whistle from a pig's tail," than to produce profitable crops from unsuitable soils, and the vegetable now in question has its preferments, which when understood and supplied, make the "job begun half done."

A cool, moist soil is the first desideratum and, as this requisite is found in soils of different mechanical structure, we have quite a range of selection, although there are advocates of certain kinds who claim that in their's alone will this crop come to highest perfection, a conclusion in which common sense and practical experi-

ence do not concur. Generally speaking, all low flat lands have a temperature considerably lower than adjacent uplands, their coolness being caused by greater evaporation from their surfaces; and greater moisture since their sub-soils are the natural receptacles of drainage from the higher lands about them. As river bottoms, valleys, bog lands and shores of inland lakes abound in such tracts, certain localities have become famous for growing this crop; but experience with various soils has taught us that no particular muck is vitally essential to raising good paying crops of Celery. Some Michigan lands, peaty in nature and abounding in humus, produce early and abundant crops without solidity. The growth is luxuriant but soft in texture, therefore inferior in shipping qualities, while it freezes more quickly in the late Fall than equally heavy crops grown on other kinds of lowland soil. In drouths such peaty soils "burn" the plant and cause more rot when banking in warm weather, than soils having more loam.

On almost any farm in our Western States can be found another variety of low-land known in different sections as sloughs, swales, etc., having a deep brown or black loam eighteen inches to several feet in depth, over-lying gravelly and even stiff clay subsoil; these plats when broken up and gotten into fine tilth, make excellent Celery land and grow less hollow and more solid stalks than previously described lands. We have grown acres of Celery on such soil for home use and shipment, which has come into competition with lots sent out from centers where this industry is now greatest and our's always commanded premium prices in the open market for all we could produce, while we had only a small disadvantage in the working expense of production, since such soils are somewhat heavier in working than true muck and sandy marsh land.

Another species of soil abounds in this district which in consistency of working is a happy medium betwixt the PRECEDING TWO and upon which is yearly grown the finest stock. We refer to the Lake View district of North Chicago. It lies a little inland from the sandy beach of Lake Michigan, extending in a narrow strip for miles north of our city and is a sandy muck and alluvia mixed, light, porous and constantly watered like the famous bulb gardens of Holland, by ascending moisture from a water level in the earth but two or three feet below the roots of the plants, yet which never rises in properly drained fields to saturate the top soil nor to injure roots by standing water. So well adapted is this soil to Celery

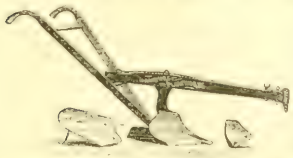
growing that hundreds of acres are devoted to it and millions of plants are grown yearly, yielding the finest celery in the world. The methods of culture are the finest and the fame of the product has spread far and wide, so that not only does it supply the Chicago market but the surplus is shipped in all directions.

Wherever soils such as these three above described can be found contiguous to a city, or even a country shipping station, there it is safe to drive one's stake. By digging two spades deep in several portions of such fields the nature of their top soils can be easily determined and if suitable, attention should next be turned to Drainage. This crop though requiring moisture, suffers as much from standing water on the surface or within one foot of its lowest roots as many others not so great water lovers, therefore tile-draining or open ditching is essential. Again, such low lying lands are liable to submersion in early Spring when work should begin, in Fall before digging the mature crop and often during the flooding rains of June. Any intelligent land-worker can survey his field and accomplish this drainage as his particular case may require without specific directions from us. The only point we will urge is that it be well done.

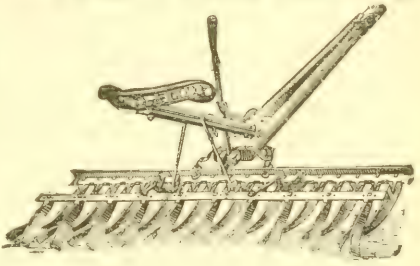
We avoid discussing the merits of upland for this crop, as we are striving to present directions for the MOST PROFITABLE conduct of Celery gardening viewed from the market gardener's standpoint, although for the small garden where choice of land cannot be made, the cultivator need not despair of growing for home consumption and small local demand good crops on loam or light clay uplands. Though somewhat at the mercy of drouthy seasons, Celery grown on this last named soil is more solid, keeps longer and does not freeze so easily as the more succulent growth produced upon lower lands, with the compensating advantage of suffering less damage in extremely rainy seasons. However, upon a large scale where conditions must be fittest and all the economies observed, the former three soils must have preference. They will be rare districts indeed, where some one of the named soils to the extent of a few acres cannot be found; and in our travels through various sections we see lying in waste, acres which could be easily transformed into profitable fields.

PREPARATION OF THE GROUND.

Premising that the field selected has not before been worked in plowed crops and that complete drainage has been secured by the last of August, we commence, say September 1, by casting on and distributing sixty good two-horse loads of rotten manure per acre, scattering evenly over the whole surface. Then with a good steel sharp-shared plow we proceed to plow our ground, turning a neat but shallow furrow slice, so as to completely invert the sod and manure, cutting just wide enough that the sods may lie flat with joints overlapping as little as practicable, that the subsequent harrowing may not tear up the turf. The object of this shallow plowing is to hasten decomposition of the sod and allow the coming frosts to fully act upon it. With a light or medium harrow we go over our whole ground in the same direction it has been plowed, "lapping half" each round until all has been gone over twice, then if well fined down, two harrowings cross-wise will further level our piece and fill in the crevices. In cases where sod is unusually tough and a poor job of plowing has been done, a heavy roller run first in same direction with furrows and finished crosswise will allow easier and more finished harrowing and less tearing up of sod; but it pays to perform these operations well, with deliberation and a skillful steady hand. A plow with rolling cutter or stiff coulter is necessary for plowing such land and in this as in all operations with tools, the sharpest are the best.



DETACHABLE MOLD-BOARD PLOW.



ACME PULVERIZING HARROW.

A good steady and strong team will be required for some sods, as many of these lowland turfs are filled with roots as strong as thongs of steel and offer great resistance; who plows slowly plows best under such conditions. When finished, as here detailed, the

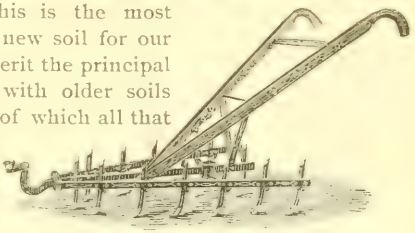
coming months of frosts and severe freezings will finish the disintegration, and by Springtime everything will have crumbled away and our land will be in friable condition.

During Winter, with cart or sled haul on fully as much more manure as was first applied, leaving in piles at convenient distances for scattering in early Spring, then there will be no mismoves nor delays when plowing time comes again. There will be less leaching of the manure if spread at once than if allowed to remain piled through the winter, yet the advantages of the thorough action of frost upon the upturned sod, and of the earlier drying off of the soil in Spring whereby a week's delay in plowing may be saved, overbalance any loss by leaching of manures and make piling the more desirable method. Two or three hands ahead of the plowman can quickly distribute the manure and prevent delay.

From April 15 to May 1 Spring plowing begins. With manure evenly distributed over the surface, we proceed to plow, THIS time from eight to ten inches in depth, the object being to bury the top sod and manure where the feeding roots can ramify it during the growing season. To be sure the Celery roots will spread out near the surface if most of their food is there, yet a greater success will follow if the main supply is a little deeper. This induces the roots to run deeper where the soil is cooler and more moist, making the plant stronger and giving it a water supply in the drouth of midsummer. The quick start after transplanting can be given by a course of surface fertilizing. It will be seen upon consideration that after the ground has been furrowed out to receive the plants and the roots of each are set down two or three inches below the field level, we are closer to our storehouse of plant food than at first appears.

After this plowing is finished, do not harrow immediately but give the soil chance for aeration and further sweetening by late Spring frosts, of course governing the matter by the first use to which our land is to be put, whether to Celery for a first crop or to some other vegetable with which we intend to "double." If the latter is our intention, scatter evenly broadcast fine ground bone at the rate of about one-half ton per acre and harrow at once; other good commercial fertilizers can also be used for this purpose. Now we are ready for our crop if we intend growing something else before the season of transplanting Celery—otherwise our land lies in the rough as before stated till June and later, or only with sufficient

harrowing or cultivation to destroy the weeds which invariably start, reserving the application of bone dust, etc., until final preparation for the Celery crop. This is the most thorough way to prepare new soil for our purpose and seemed to merit the principal description as compared with older soils already under cultivation, of which all that is necessary to observe is, that they should conform to our description of suitable soils, be highly fertilized and in the best possible tilth to produce a heavy crop. A deeper plowing than usual will benefit such lands when devoted to Celery for the first time and a cross plowing, where practicable, when the plowing has previously been repeated in one direction. This is especially true of stiff soils. We would recommend for older soils, repeatedly cropped, an occasional rotation, a growing of green crops of rye, peas or clover for turning under and an absolute rest at intervals.



IRON FRAME EXPANDING HARROW.

FERTILIZERS.

Very much could be said upon this topic, volumes having been written upon manures and specific formulas constructed, based upon analyses of different soils, many of them theoretical, and while it would be interesting to intelligent cultivators to elaborately study this question with good authors, we will here confine ourselves to practical means which we know are general and will perfectly enrich the soil. Our first injunction will be like the good cook's, who when asked how he concocted so fine a cup of coffee, answered, "By putting in plenty of Coffee." The complaint of the farmer that too much manure makes his crops "run to tops," is to us a hint of the thing needful. It is tops we want and in as great profusion as possible. Therefore manure generously; it will be hard to get too much of this good thing, provided it is well rotted and thoroughly incorporated in the soil. The quantity stated previously should be considered the minimum application per acre.

Of all complete manures, first and foremost stands the product of the barnyard, properly manipulated and composted. With enough of it at hand we need look no further; but with lack of such supply, we must piece out with commercial fertilizers. Under

the topic "Preparation of the Ground," we mentioned finely ground bone as a complementary manure for this special crop, not because we deemed it superior in ammoniacal qualities to pure Peruvian Guano, but because it is less caustic and does not burn and spot the stalks and hearts of the Celery plant as Guano often does when carelessly applied. Phosphates also seem to combine with animal manures and make a more complete fertilizer than any other mixture, therefore it is the best formula we can recommend, though we do not decry the fertilizers of commerce when pure, such as guano, blood and bone, super-phosphates and special manures for certain crops, since we know that in small compass can be concentrated the active ammonia of a wagon load of barnyard manure. But the question lies deeper, it is one of mechanical conditions of the soil. Because a rock or plank can be charged with ammonia, it does not follow that is fertile for crops. A hard compacted soil devoid of humus needs the action of the fibrous portions of stable manure to render it loose and light enough for plants to assimilate the food within it. It was a hard headed farmer who replied to the statement that the time was coming when he could carry the fertilizers for an acre of land in his vest pocket—"Yes, sir; that may be true, but I am thinking I could carry the whole of my crop in the other pocket." Still on new soils abounding in humus, where sod or green crops of any kind are plowed under, commercial fertilizers have a secondary value not to be overlooked and yield better results than on older soils or on stiff ones which require the mechanical action of rotting fibrous manures. Here if such manures cannot be obtained in sufficient quantity, a combination as before suggested is the best compromise.

Liquid manures are available for small plant beds and gardens, but on a scale of any magnitude are impracticable. A rotation of fertilizers is often quite as important as a rotation of crops. Frequently in old soils where but little response is given to liberal manurial applications, a thick sowing of air-slacked lime will act upon the inert and insoluble ingredients freeing the ammonia and other elements which have become "fixed." In conclusion, we will note that the longer and more littery manures in some seasons "burn" the plants and that a large proportion of cow manure mixed with these makes a cooler and more suitable compost than horse manure alone. All applications should be thoroughly mixed and turned under in plowing, as in banking Celery it is far better that clean soil should come in contact with the plants than rank manure; although

we have read of a slipshod method of bleaching Celery by piling litter against it, a practice which we cannot commend.

VARIETIES.

No grower will go amiss in planting the following varieties which have been fully tested in all parts of the country and have become the standard sorts:

GIANT GOLDEN HEART, is a large growing variety of excellent quality, handsome and showy in appearance and of fine flavor. We can recommend it for the market gardener and for private use. In this vicinity this new kind is taking the place of all others for second cropping, as its vigorous and rapid growth when planted in the middles of growing rows late in the summer enable it to make a heavy crop in the shorter season allowed by this practice and we strongly recommend it for general crop purposes.

GOLDEN DWARF OR GOLDEN HEART, is now a leading sort and is planted more largely than any other, superseding the old giant varieties, since it possesses as large an edible portion in weight as the tall sorts, while it is handled as regards banking and storage at one-third the expense of the other. It is entirely solid and full hearted, of a waxy golden yellow color when bleached, and is especially valuable for its excellent keeping qualities and because it will blanch a week sooner than any except the so-called self-blanching kinds.

CRAWFORD'S HALF DWARF, is a little taller in growth than above and different in foliage, it is a strong growing variety of splendid quality and is cultivated here in next larger quantity to the main crop; it makes an excellent Fall Celery, also keeps well and rarely has hollow stalks.

PERFECTION HEARTWELL, is a variety of merit, similar to Crawford's, with more slender stalks, but heavy at base. A strong grower, good for Fall and early Winter use, but not so good a late keeper as some others.

BOSTON MARKET, although not grown so largely here as formerly, this is an excellent variety. It is the staple kind planted by the gardeners about Boston, from whence its name. The leaves are entirely different in coloring from the other dwarfs, being of a

dark glossy green, the stalks are very solid and bleach nearly white. It is the best keeper for late Spring use of any of the green kinds, in fact, this quality renders it less easy of early bleaching than our other sorts and for this reason principally is now grown less than heretofore in this district.

NEW EARLY MARKET, a strain of the above which can be planted with it as a second crop and matures much earlier than that variety if planted at the same time. Is a short stocky grower and will blanch quickly at any stage of its growth. A well grown plant is about 18 inches high, while at a height of 15 inches the plants are about 12 inches in circumference. Its extreme earliness of bleaching, which can be accomplished two months before the Boston Market can be made fit for use, is likely to bring it to the front.

WHITE PLUME is a handsome, crisp sort of very easy culture, the flavor being excellent and its foliage ornamental, white and variegated in color. It is good for Fall and early Winter use only, and is well adapted for "banking" with boards and "double cropping" with the other varieties as described later, but does not keep well for latest use.

PARIS GOLDEN SELF-BLANCHING, is a handsome French variety of recent introduction which has proven so popular that for the past three years, seed could not be supplied to meet the demand even at three times ordinary prices. The plant is of very handsome appearance, close habit and compact growth. The large heart is of a beautiful golden yellow and even the outer stalks are of a yellowish white color with little if any banking or bleaching. The ribs are perfectly solid, crisp and of the finest flavor. It is an excellent keeper.

NELLIS' SELF-BLANCHING, a new variety of much merit possessing the self-blanching qualities and the added advantage of keeping later than White Plume and some others. In habit of growth similar to Golden Dwarf but grows some shorter than that variety. Is worthy of trial by those who like the self-blanching sorts.

NEW ROSE, although in this country but little grown for market, their extreme hardiness and superlative keeping qualities make the red Celeries very desirable for family use and deserving of

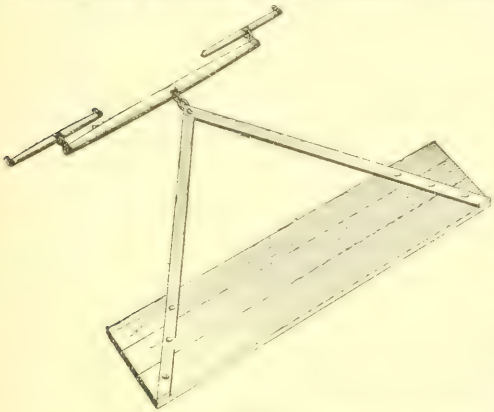
more universal culture. This new sort is the best of its class and, its heart and stems beautifully shaded to a fine rose color, make it extremely ornamental to the dinner-table.

CELERIAC, Large Smooth Prague, (New) short leaved, very smooth, the roots more globular in form than other turnip rooted kinds. Unsurpassed for salad purposes and the most desirable for general culture.

From this list as complete a selection can be made as the most enterprising gardener requires, and if pure seed is obtained and proper culture observed, the stock will be in lively demand in any market.

PLANT GROWING.

It is best to choose the most sheltered portion of our field for the seed-beds in which to grow our plants, having regard for prevailing winds and convenience to water. In our district, many of the fields are so exposed, that when the top soil becomes dry, portions of the beds are often bared of covering for the seed, and others are buried several inches by the shifting soil driven by the high winds. Often again the sand blast cuts off the young and tender plants causing serious loss. We have never heard similar complaints in other sections and perhaps the caution implied in this is superfluous for most growers.

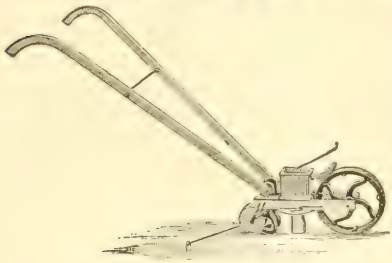


PLANKER.

The beds should be more thoroughly enriched upon the surface than the field for the general crop, and then should be plowed or spaded into them a covering of about two inches of well-rotted

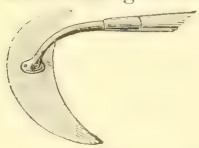
manure, which should be harrowed or raked fine and then level as perfectly as possible. If the beds are laid out on a large scale, a planker drawn once or twice over the ground will be more effective than any hand raking one could give.

Now, with any good seed drill sow the seed thinly in twelve inch rows in the longer direction of the bed for economy in sowing and after cultivation. Cover the seed in light soils from about one-eighth to one-fourth inch deep. We do not favor simply treading in the seed, or giving it no covering at all as is sometimes advised, yet our practice would not do on heavy loam or clay lands. Here less covering is needed and the seed may be firmed in by light rolling. In about three weeks under average favorable conditions the rows will show sufficiently to begin light cultivation. These plants make feeble growth at first, and a failure now to kill the first crop of weeds is fatal to later easy cultivation. Here a "stitch in time saves more than nine." Cultivate with scuffle hoes and upon a large scale with the "Gem Cultivator" which does good work in a short space of time. A few days after this begin hand-weeding and disturb the plants as little as possible, especially in a dry time—thinning out being postponed until the second weeding, then thin the plants, leaving two to the inch, and mow off the tops several times during growth in the plant beds, in fact, every time the plants crowd, an apparently rough treatment, but one which careful hands successfully perform. Cut back large beds with a scythe and small ones with a sharp sickle or even a large pair of shears, taking great care to avoid cutting too low. Leave the hearts of the plants untouched. Plants so grown are fully as good as transplanted ones, not half so liable to sucker and are grown at one-half the expense.



MATTHEW'S LITTLE GEM DRILL.

GARDEN ROLLER.



SCUFFLE HOE.

This describes our plan of growing for the MAIN crop which is

set out in July. For the June setting of early Celery, plants are raised from seeds sown in spent hot beds, where we have taken off crops of early lettuce, or seedling cabbage and cauliflower plants to transplant into later frames. A sowing in these vacated beds made from March 10 to 15 will afford us plants by June 10 to 20 for our first crop of early Celery, quite as early as it is advisable to plant and be safe from damage of the crop partially running to seed—all stalks doing this being unfit for use.

SINGLE WHEEL ATTACHMENT.

GEM CULTIVATOR AND ATTACHMENT.

In case such hot beds are not at hand, a mild hot bed can be made. A temperature of 40° to 45° at night is sufficient, since the hot-bed method is apt to produce spindling plants, unless a low temperature is maintained. It must be properly ventilated and kept reasonably moist or lice will abound. It not infrequently happens that plants in such beds must be fumigated. Plants must be properly thinned at the right time and the rows should stand no closer than four inches, every other row being taken up when first transplanting them. They are set when somewhat smaller than those grown in open ground and generally need but one shearing before transplanting. Prepared plant-bed cloth is a much better covering for these beds than glass sash, using the heaviest cloth, this being the fullest protection at this season of the year. At Chicago but a small portion of the crop is raised from these early plants, most attention being given to the later crop, which is in greater demand.

PATENT PLANT BED CLOTH.

The above dates are for plants grown for home use, but there

are plants produced for shipment to other sections, notably the Southern States, where demand does not begin until August 15 and continues until Oct. 1, the seeds for which must be sown June 20 to July 1 in this section. This is mostly done between the growing rows of other plants, where every other row has been taken out, or as a double crop between any close rows of other vegetables, since it is difficult to raise these plants so late in the season without partial shade. In some other sections of the country they are grown in frames covered with lath or other screens, or are started in the field under mulching which is gradually removed to harden the young plants to the midsummer sun.

In estimating the probable quantity of seed needed for a given number of plants, count that an ounce of seed will yield from five to ten thousand plants, though there are quite five times that number of seeds per ounce. Allowances must however be made for the contingencies of germination, growth and thinning. It is quite safe to strike the average at 8,000 good plants from an ounce of seed or 128,000 from one pound. This would plant about four and one-half acres. The cost of seed bears such small relation to the final value of the crop, that the seed buyer can illy afford to hesitate between known reliable seed, even if higher in price, and cheaper but possibly unreliable stock.

With a good lot of plants now ready, produced by the foregoing plan, we come to the first stage of field operations in placing them where they are to finally grow.

TRANSPLANTING.

Transplanting is done about Chicago from June 10 to August 15, the extreme dates for late settings. Between times operations are guided according to the objects in view; whether this crop is to follow other vegetables, or whether two crops of Celery are to be grown on the same ground, or whether the plants are to be set between growing rows of potatoes, cabbages, onions or sweet corn.

When soils are loose and the ground is moist, plants can be pulled by grasping firmly with the hand several stalks at once. This avoids bruising and breaking of stems and leaves, as happens when they are allowed to slip through a hand having a loose grip. When soils are stiffer and the weather is dry, first loosen the earth

about the plants with a spading fork and lift instead of pulling them, thus saving many fibrous roots.

A portion of the tops and the ends of the tap roots should be sheared off, which can be done quickly by handfuls and the plants then placed upright in shallow boxes, with bottoms covered with damp soil or moss. If plants are lifted in dry weather and some time in advance of setting, dip each handful into thin "grout" coating the whole lengths of the roots, thus preventing evaporation while new fibres form. With these precautions to prevent wilting, it is better to take up plants a day in advance of using, than to transplant immediately. The fine white roots soon push through this coating, sometimes in twelve or eighteen hours and take quicker and better hold in their new beds, than if set out in the same hour they are lifted. With this same treatment plants, if properly packed to avoid heating, can be successfully shipped to distances requiring two or three days in transit. We have in some instances sent them out when it required five days to reach their destination. Contrary to general belief, plants do not begin to die as soon as removed from their seed bed, but summon their energies to survive the shock, and if met with proper conditions will live longer than is generally supposed. When carelessly lifted however, with the tops left unsheared and the plants allowed to dry out, there is not sufficient vitality to withstand the shock of removal and such management.

Though the plants are to be kept moist, yet observe this caution, NEVER WATER THE TOPS WHEN CLOSELY PACKED. If sheared as directed they will absorb sufficient moisture from the bed of wet soil or moss in the bottoms of the packing boxes, while watering the close mass of tops would surely cause them to rot. There are yearly losses in shipment because of such treatment, sometimes done when first packed, and often by well-meaning but ill advised employees who handle them in transit.

Our plants being in shape for setting and our ground in proper tilth, we make our furrows from three to four feet apart. Plants ought to be carried in small handfuls by the planter, and be firmly set with dibber or transplanting trowel just to the crown of the root and no deeper; by this method plants are not so apt to sucker and violent rains will not wash the soil over the new and tender hearts just pushing forth, which sometimes causes rot. One quick thrust of the dibber makes

Transplanting Trowel.

Dibber.

the hole, and another next to it closes the soil firmly against the plant. This is sufficient. A fussing and hovering over each plant as it is set, is worse than useless. It hurts the plant as well as wastes valuable time. A good, skillful workman should set from five to seven thousand plants per day, though from four to five thousand is considered an average day's work. A bright boy carrying and distributing plants will prevent delay. With our favorable soil on cloudy days and most others except windy, dry and hot ones, one can set all day without interruption. Setting just before a rain is better than just after. Great care should be taken on clay and loam soils to avoid tramping the ground after rains as it packs it injuriously.

When weather has been unfavorable, planting delayed and there are many plants to set, we have found the following to be a good plan: Plow just enough land to hold what plants can be set each day, say from four o'clock in the afternoon until dark, always having everything ready at hand with which to work expeditiously and le the furrows be made just ahead of the planters. The plants take root in this freshly turned soil almost before it can dry out. Six inches in the row is the proper distance for setting the plants. A less distance crowding them and a greater wasting the space. Unless very dry weather follows, plants so set should soon take fast hold in their new places and be past wilting. We find it rarely necessary to practice watering, an expensive and laborious job if properly done, and harmful if only light sprinkling is practiced. In an extra dry time a thorough soaking of the whole ground under the rows will advance the plants, but it is rarely practicable here on a large scale, and if we trust to thorough transplanting and the usual rainfall, we seldom lose even a small part of our plantings.

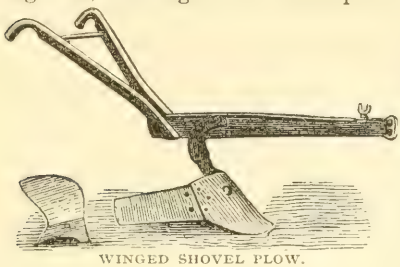
We do not expect much growth immediately and little work is necessary more than light cultivation to keep down the weeds until the time arrives for thorough stirring of the soil and working it towards the rows, preliminary to hilling and banking, since it is better not to disturb the newly transplanted rows until thoroughly rooted and some growth is made.

GROWING TWO CROPS OF CELERY

Before entering into details, we will digress from description of methods to a discussion of a point which it is now time to consider, namely: whether we wish to make a speciality of growing this crop alone, producing both early and late Celery for home market and shipping, or whether we are to conduct the business as we do here, making it one of the economies in our general system of gardening. In the first place for a new grower in the smaller cities, where home demand is slight and a shipping trade not yet started, early Celery is not a safe crop to handle, since the demand is never so large as for the late growth and the early crop is also very perishable at the season of the year in which it is ready and must be pushed off as fast as bleached. The later crop coming at a time when the truly large demand exists, and a cooler season is at hand in which to preserve it, make it the safer stock to handle. Large growers and shippers with trade established, having wide correspondence and sending their product to every section, find plenty to do, and use up their first early crops satisfactorily, but beginners can only make haste slowly in the smaller places mentioned, though, if near the the lively markets of a great city with steady daily demand, all may stand a comparatively equal chance in the open market; but even here that lively inquiry never exists from August until September, when other green vegetables are yet in profusion, that does through the balance of the year and on until the succeeding spring, even as late as April. Well wintered stocks are always in great demand and the wise grower will see to it that the major portion of his crop consists of late varieties that will be in the best possible shape for Thanksgiving and Holiday time and for the later Spring use.

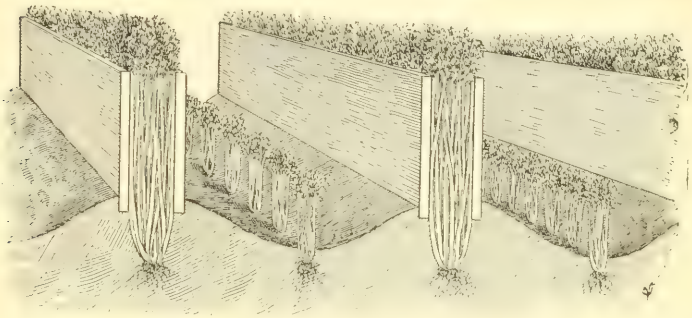
Having first suggested provision for the disposal of early crops as fast as ready, we will now speak of the methods of culture. With ground ready about June 10, we furrow out shallow rows three and a half feet apart and use for this planting the plants grown in hotbeds from our sowings in March; we generally use the White Plume variety for this early setting, since it can be readily blanched by the process of bleaching, we employ for the first half of our crop, though Golden Dwarf answers well. This planting should be finished by June 25, at latest, that it may become fairly established by

July 10, when we commence setting the late crop between these growing rows, marking out a little deeper furrow this time, using a short winged shovel plow, which throws the dirt nicely to either side close up to the first rows, but being careful that none get covered. Now finish the bottoms of the newly marked furrows with a narrow rake drawn rapidly through them, making a flat bottom to receive the plants. The wisdom of putting down the manure so as to be under our crop is now obvious. This latter planting can continue as late as August 10, and with our first planting will afford a succession from September 1 until March or April, as the latter portion of the second setting is only partially banked where grown, the bleaching being completed in "beds" as detailed in chapter on "Winter Storage and Bleaching."



WINGED SHOVEL PLOW.

In about two months after planting, the bleaching of these first rows must be begun, for which purpose we use twelve-inch rough



BLANCHING WITH BOARDS AND SECOND CROPPING.

boards sixteen feet long, conveniently placed on each side of the rows, at first laid flat upon the ground, with the inside edges next to the Celery, close up against the rows; now a man at each end astride the row, lifts his ends of both boards and closes them against the Celery, with leaves gathered upright and holds the boards from

spreading with the feet against the bottom edge. The boards are now clamped together by notched wooden pieces, applied on their upper edges at three or four equidistant places along their length, which prevents them from spreading and holds them together within two or three inches according to size of the Celery, neither crushing the plant nor leaving them too open. Plants so enclosed will bleach in two or three weeks and after first cost of lumber is considered, this is the cheapest and most effective method that can be employed for the purpose, when working two crops of Celery on the same ground at once. The operation is completed by drawing sufficient dirt against the bottoms of the boards to keep them immovable and keep out light from the lower portions of the stalks In the meanwhile keep the central rows well cultivated with pronged hoes and hand cultivator, which gradually fills the furrows, and be ready by September 10 (when the first boarded rows will have been dug) to again use the same boards on the later planting. By pushing off our first crop as rapidly as possible we can use the boards on our second crop up to October 1, after which if we bleach more of the latter, it is best to bank with dirt, as cooler weather is now at hand and also for other reasons ; the land should have been before this cleared of the first crop, and there would then be sufficient earth to bank the remaining rows, or as many as are needed for earliest winter use ; a portion of the plants, however, are only hilled enough to keep them upright, preparatory to placing them in the "beds" for winter storing and bleaching, and are the stock we intend for latest winter and early spring use. A still earlier first crop can be grown, by commencing to transplant the first rows two weeks sooner and a close succession made by setting the second crop from the first outdoor plants which are ready by July 1 ; but the general plan described is the more practicable and profitable.

A few small growers, whose grounds are in superlative condition and limited in area, sometimes grow three crops in one season by extending the plan described, but making the first planting about May 15 and marketing the first rows by August 1 to 10, immediately replanting the vacated ground ; but this is too much Celery to the square acre and comes in a time when it is apt to rot, and a portion of it to run to seed, and is only mentioned here to illustrate the unprofitable extremes which some growers with a hobby practice. There are also growers who have plenty of cheap land, who plant in three to three and a half feet rows and grow but one crop from their

July setting, letting the ground lie fallow the earlier part of the season ; but this is not working good land up to its possibilities. If for reasons before stated it is not desirable to go into business of growing early Celery, and the ground is only needed for July setting, the plan in the following chapter will show the economies of double cropping, now generally practiced, but which are not so peculiar to this district as some of the other methods considered in this book.

DOUBLE CROPPING.

The system of growing two different crops of vegetables upon the same ground, and partly at the same time is practicable with any early first crop, and Celery grown for Fall and Winter use. Beets, peas, lettuce,spinach, radishes, etc., are all available for the purpose. Onions are often grown, in which case onion seed is sown in fourteen inch rows, the outside row of the field and every third row thereafter being left vacant for Celery plants, thus giving the celery rows the required distance of three and one-half feet apart. The objections to this crop for a "double" are the tramping of the ground which is unavoidable in pulling, turning, curing and removing the onions from the field, and that the dried skins and tops of onions make a littery field, and drift with the winds against the Celery rows making slovenly work. Planting Celery between rows of sweet corn is often followed by good success, but operations must be carefully timed, and early varieties of corn used, so that the Celery may not be shaded more than two or three weeks after planting, since corn makes a more complete shade than the other crops suggested, and might cause the stalks to grow too spindling. Early cabbage and cauliflower work well with Celery. The earliest varieties can be entirely cleared from the ground so it may be thorougly plowed before receiving the plants, or in case these crops occupy the ground longer than expected, Celery can be set between their rows before the heads are cut off, and as stumps are removed the space can be used for cultivation of the second crop. Grown in this way either crop is a clear profit, as the value of one should offset the expenses of working and harvesting both crops. On account of the partial shade afforded and the slight hilling required, the early potato crop is especially suitable for sharing the field with Celery. For this purpose potatoes should be planted from April 10

to 15 in three and one-half feet rows, dropping single eyes 18 to 20 inches apart in the rows, both marking out and covering with a plow. The two or three cultivations given these, naturally throw the soil

"DOUBLE CROPPING" WITH POTATOES.

toward the rows, though we do not advocate the old-fashioned hilling. This prepares just such a place in the center of the drills as is needed for setting Celery, which is done from July 1 to 15; the plants receive partial shade from the vines, and are not interfered with when the potatoes are dug. As soon as the tops are carted out of the field, horse or hand cultivation can be given with plenty of room to work, and the Celery rows can be readily banked with soil instead of boards.

Double Cropping is successful and profitable in almost all sections, unless we except the Southern States where some of these first crops are not adaptable and the seasons of transplanting are not the same as with us. However, we intend to demonstrate that even there with our system and a change of planting season, Celery growing can be made a successful and paying enterprise.

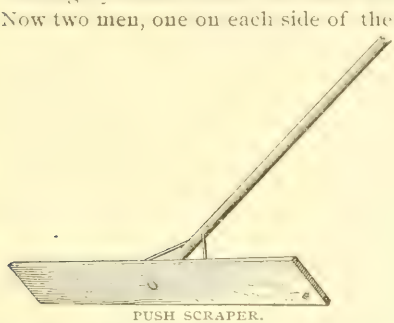
The plan of growing two crops of Celery on the same ground or of "double cropping," we esteem most worthy of careful consideration on account of its economy, and economy wins in the race for profits.

HILLING AND BANKING.

Reference has previously been made to the bleaching process, but certain important points require detailed mention. We engage eagerly in our tilt with fossilized methods in memory of our purgatorial experience as we knelt on tender knees astride our rows and handled with cramped hands thousands of plants under a pitiless

sun, or in remembrance of the useless and worse than useless hillings of this plant at so many stages of its growth. Tedious and painful experience has taught us progressive methods at both these points. We protest against the method still advocated by some, that each plant shall be handled and the dirt gathered to it with the hands lest a little soil touch and thereby rot the heart, that is only a bugbear, a fancied danger, and an expensive waste of time and labor, the cause of more useless work than even the traditional digging of trenches and growing of the giant sorts by the cumbrous methods of old.

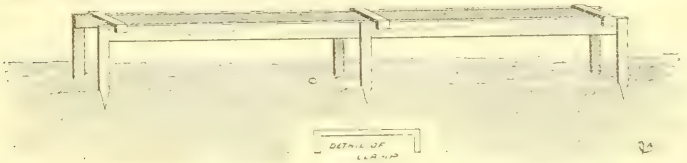
Too much hilling of this plant prevents perfect development, but without banking, Celery will be tough and stringy in structure and rank in taste. To make it tender, white and crisp, requires hilling first and banking later, nearly or quite the length of the stalk, but the first operation under improved methods is more expeditious and effective than formerly. Two hillings at most are enough before final banking and one in warm weather is better than two. The plants should acquire a certain thickness before much earth is drawn to them, since as soon as completely hilled, the stalks shoot up tall without corresponding thickness. With some of the best stock grown, hilling has been deferred until but a short time before bleaching. When ready to hill, the center of the rows should be thoroughly worked and the loose dirt thrown towards the plants. Now two men, one on each side of the row, with a "push scraper" should gently move the dirt against the plants, which straightens the stalks and makes a slight bank about six inches high to hold them upright. This at most should not be over one-third the height of the plant. This work properly done and with soil in right condition no more injures the hearts of the Celery than the old-time handling, with the additional advantages of better holding the plants in place and of being more rapidly done. This process is followed by banking proper, which occurs generally with plants intended for first bleaching about eight to ten weeks after transplanting.



PUSH SCRAPER.

At this stage of the work much hand labor can be saved by the

use of the following devices: Two sideboards sixteen feet long on opposite sides of the row, held in position by stakes nailed to them which are thrust into the ground, hold the stalks perfectly straight



SIDE-BOARDS.

and upright while a man each side banks the plants to the desired height the length of the boards. Then the boards are lifted and the holes left by the stakes are filled and another section of the row is treated similarly until the whole row is banked. Six inch boards are sometimes used with stakes separate having a shoulder cut at their tops and notched so as to receive the board. The notched sides are turned towards the row and the Celery tops gathered so closely together, by their outward pressure hold the boards from

FINISHED BANKING.

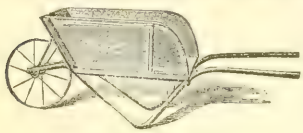
falling out of the notches. The latter method claims easier handling, and of lifting the stakes out with less danger of a sliding of the new banking, but whether attached or unattached, the stakes push easily into the soft ground and either way answers. Care should be taken not to press the soil too firmly against the plants, a gentle backing of the soil with the spade as it is thrown up, with the weight of the dirt, is sufficient, which leaves the plants ventilated

yet enclosed with earth sufficiently to effect bleaching. This is not a theoretical plan, but an actual working effective one used by successful growers. A trial of this practice will commend it to gardeners as a saving of time and labor, which has a money value, and there will be no return to former methods. Two efficient men at the work will surprisingly increase the amount of banking they formerly accomplished. Much of the Celery banked in this section about Chicago is put up without handling and even without the use of these sideboards, but requires more straightening of the stalks and leaves by hand; their use will be found a convenience and benefit.

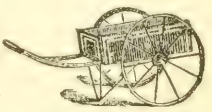
DIGGING.

When sufficiently bleached, choose dry weather for harvesting the crop. If digging for storage, never handle the tops when wet or frozen, as rust and decay will surely follow. If the weather is very dry and windy, put away the piles of Celery very soon after digging, lest they wilt, in which condition plants will root poorly, turn yellow and keep badly.

An expeditious method of digging our crop is to first run a one-horse plow on one side of the bank, letting the land-side run close to the row, setting the clevis over, that the horse may walk clear of the banking. This leaves it an easy matter to finish with spading fork or spade and enables us to throw out the plants quite rapidly. If to be used for immediate marketing, pull off the outer stalks and pile in wheelbarrow or cart for removal to the bunching house. If for storing in the field for winter use, do not trim off the broken outside stalks so closely as for immediate bunching, and put into small piles that they may be conveniently carried to the beds which should be made if possible in the field where grown and parallel with the rows, these beds being located centrally to the rows that are to fill them as will be detailed at length in a following chapter.



WHEELBARROW.



HAND CART.

In the largest fields, the crop can be plowed out with two horses one on each side of the row. Run the standard of the plow a few inches

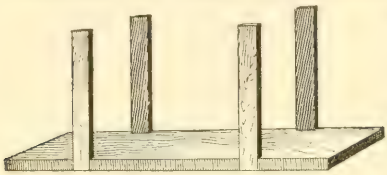
to the left of the stalks, with a right-hand plow, having the clevis set as high as possible that the whiffletrees may not break off the Celery tops. A skillful plowman with short practice will break no more stalks than is done when digging with spades, with the advantage of greatly economizing time. With this plowing out of the rows, the plants are partially covered with loose soil, which prevents wilting from exposure to sun and wind in a dry time, while it allows the throwing out of a sufficient number of rows to fill quite a section of bed before taking them from the furrows to the storing place. A steady team and good plowman after the first row is turned on its side, will find no further difficulty and the crop will be rapidly harvested and in good shape.

Small areas, where horse and plow are not at hand, can be dug with a spade, first shoveling away the banking from one side and then digging under the roots of the plants lifting them out by a slight pull on the stalk, in addition to a prying movement with the spade. If intended for bunching at once, a slight cutting of the roots does no harm, but if for storage, it is better to preserve most of the roots, as the plants should again take hold in the beds to keep well after storing. It will be readily seen that by the quick plans described a large crop can be harvested in a short time, avoiding much risk of loss late in the season when severe weather threatens to lock up the ground for the winter.

BUNCHING AND PACKING.

Where a large product is handled, with sales commencing at the earliest diggings, and continuing until the spring months, proper conveniences for cleaning, bunching and packing are indispensable and the more completely they are arranged, the more economically will the stock be made ready for the market. With hydrant or pump at hand, a good sized square tank, at least seven feet long by two wide and deep is set at proper height, so stooping will not be necessary, having water supply at one end and a waste plug in the bottom at the opposite end which should be set about one-half inch lower to allow complete drainage when drawing off the dirty water, after washing. Tables at the right and left should connect with the washing apparatus, one on which to pile the trimmed stalks and the other for the Celery when washed. At this last, stands the buncher with

his rack made to receive twelve or thirteen stalks and the strings depending from boxes overhead, so as to be entirely out of his way while filling the rack and tying the bunches. The stalks are first trimmed of the broken and green outside stems and the roots cut to a point and four sided with a sharp knife for clean smooth work, leaving as large a portion of the root as possible. Now they are thrown on the table at the right of the tank where they are taken as needed by the washer, the vat being kept two-thirds full all the time, so the dirt can partially soak off, ahead of using the brush. In washing, the tops are held downwards, so dirty water will run out of, instead of into the hearts. After washing, they are placed on the table to the left, convenient for bunching. The rack is made to receive four stalks in the bottom, which are placed to best advantage for appearance when tied. If the stalks are of good uniform size, three layers like this make the proper size of a bunch; but if some are small, we put five in the second or center layer, making the top and bottom layers of four each.



BUNCHING RACK.

The strings which are first placed across the bottom of the rack at proper distances, are brought around the bunch at both ends and tied closely, which finishes a shapely flat bunch of twelve or thirteen stalks and is more attractive and packs to better advantage than the round bunches put up by some growers. These are piled to the left on this same table or on a bench underneath, until a sufficient number are ready, when they are rinsed by dipping them into clean water and lifting them out quickly, holding tops downwards, being now left to drain before packing.

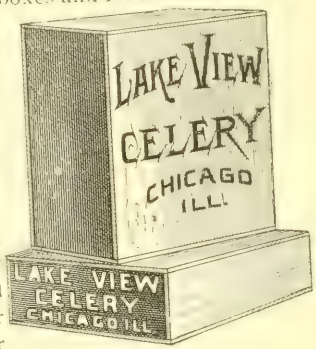
We use five-ply jute twine, which is large enough not to cut the Celery when drawing it tightly in tying and is cheaper than cotton string. Attention given to these details pays, for good stock put up in slovenly shape and in distorted bunches, does not attract buyers so readily as neat, shapely ones, of perhaps inferior stock. If sold in the home market, the bunches are packed in large boxes holding from thirty to fifty dozen and are delivered in this shape ; but if for shipping trade, lighter boxes are made of one-half inch stuff for the sides, tops and bottoms and one inch pieces for the ends. These

hold from eight to twenty dozen, the last being the maximum size since there is danger of heating in warm weather if the product is in too large bulk. In cold weather even this largest sized box is weight enough for careful handling. The bunches are packed in layers alternating the ends and in moderate weather the boxes are slightly ventilated. When severely cold, we line the boxes well with paper, doubling it at the top and bottom and realize no trouble in sending long distances in the coldest weather if by express, but if by freight, we sometimes wrap each bunch loosely in coarse brown paper in addition to the lining of the boxes which generally protects it thoroughly from freezing. In making boxes for EARLIER SHIPMENT, when Celery as a rule is longer than that bleached in the beds for winter use, we cut the lumber thirty inches long for all the boxes and for holding different quantities, make them according to the following table :

CELERY BUNCH.

7 in. deep, 18 in. wide, 30 in. long holds 8 dozen.
7 in. deep, 22 in. wide, 30 in. long holds 10 dozen.
12 in. deep, 16 in wide, 20 in. long holds 15 dozen.
14 in. deep, 20 in. wide, 30 in. long holds 20 dozen.

In making boxes for the WINTER CROP, a reduction of two inches in width and depth should be made and the lumber be cut from twenty-four to twenty-eight inches in length, for



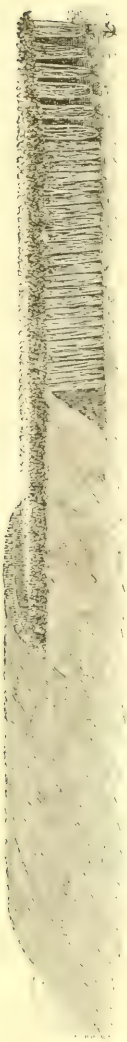
the average size Celery grown here. Boxes should be made in advance of season for this purpose, be neatly stenciled with a private brand and be ready for use when the busy shipping season is at hand.

WINTER STORAGE AND BLEACHING.

However thoroughly we understand the process thus far described and though through good management we may have a splendid crop, yet right here we win or lose it. It is the most important point of our enterprise. As a rule from one-fourth to one-third of all the Celery grown is annually lost by improper management in storing,—a loss which can be largely reduced if not entirely overcome. We take especial interest in offering to growers a detailed account of the most successful method with which we are acquainted, a method never before published and one we believe not practiced outside a few Celery districts. Experienced, practical growers in this section, who have passed through all the experimental stages in learning to grow and store this vegetable, have renounced the trench system for winter quarters and have adopted the following plan, believing it much superior for winter bleaching and preservation.

Since decay follows closely on thorough bleaching, the whole crop should not be fully banked before putting away. It is a good plan to completely bank about one-third of the field, two or three weeks before storing, to hill to about half its height another third, and to merely straighten up the last third with the push scraper about ten days before the final storing away in the beds. This gives a succession of bleached Celery in average winters if properly preserved, from Thanksgiving time until April, when it commands a higher price than the early yields.

The highest economy in our plan demands that the storage beds be located in the field where the crop is grown thus saving time, labor and cartage. Since a bed will contain the plants from a large number of rows, a place central to the exact number of rows that will fill it should be selected, that the plants may be carried to it from each side; for instance, if a bed will hold twenty rows, which it will if made two-thirds the length of the growing rows, we would count from the side of the field ten rows inward and here start our bed. This is as central as can be, and the ten rows each



1st STAGE.

2d STAGE.

"BED" STORAGE COMPLETED.

way are tributary to it. We dig up the starting row and lay the plants to one side out of our way. Now with the plow we throw up a high back-furrow, then with the spade cut down one sloping side of this bank straight to the bottom of the furrow, throwing the loose dirt out on the land side. This leaves a straight walled bank with its base at the bottom of the furrow. Now with the stalks laid conveniently to his hand by the gatherers, who strip off the outer stems and loose leaves, the workman kneeling, grasps two of them and stands them together upright against the wall of the bed; against these, two more are set and so on, always two thick and close together. When setting, he scrapes in a little of the dirt to prevent falling of the stalks. Another workman follows with a spade and banks this standing double row to its top, as is done in the field when bleaching in the Fall. This digging up of the soil for the banking of each row leaves a furrow of the same width and depth as the first one made with the plow. The new bank is now cut down the same as before, which leaves another wall like the first, against which we repeat our former operations. So we proceed until three double rows are put in on one side, then we repeat the work on the other side making when completed a bed of six double rows of Celery with a wall of eight to ten inches of dirt between the rows. The height of our bed will be nearly that of the stalks and its length two-thirds that of the growing rows. The last banks and ends are left sloping, and are then smoothly finished with the spade, the tips of the leaves just showing above the top surface of the bed. Other beds are built through the field parallel to the first, with rows counted each way as before until all are put away. The Celery now in contact with the soil on all sides soon strikes root and is in the best possible condition for preservation and bleaching providing some after precautions are taken. Leave the beds in this

way until hard freezing sets in, when, being easily reached from both sides, a layer of two or three inches of dirt is thrown over their tops. This covering is allowed to freeze so solid that it will bear up a man walking over it. When settled severe weather sets in, litter, which has been conveniently placed alongside in season, is scattered over the tops, sides and ends of the beds and is increased in quantity as colder weather demands. Never put on heavy covering at once as the warm soil in the beds would draw out the frost from the frozen crust, heat the beds and cause rot. If this crust can be kept frozen until the stock is taken out, it will be of advantage. More Celery is lost by heating and over-bleaching than by freezing. The novice is always apt to "tuck things up" at the first approach of slight freezing, which cannot injure Celery stored in this manner. We mean by severe freezing weather, a temperature of 15° above zero which continues to fall until zero or below is reached. The covering of litter is needed in the beginning of such a cold spell and should be increased in thickness as judgment determines the frost is going deeper into the beds. Herein lies the only secret of keeping Celery successfully throughout average winters. Stock intended for use by Thanksgiving time needs no covering of litter and in most seasons no covering of soil. Do not be alarmed if the tips of the leaves are frozen since they come off with the trimming of the outer longest stems when they are prepared for market, and these beds a few inches from their outer surfaces are warmer than imagined.

There are modifications to the above plan practiced by certain planters, but we believe them open to objections. Instead of start-

END VIEW OF STORAGE BED.

ing a bed with a back-furrow as in our plan, a growing row which has been banked to its top is allowed to stand and its sides are cut down, but it makes bad work when the Celery is taken out on a

cold day in winter, since this row is so firmly rooted, it must be dug instead of lifted in handfuls as is the case in stored rows.

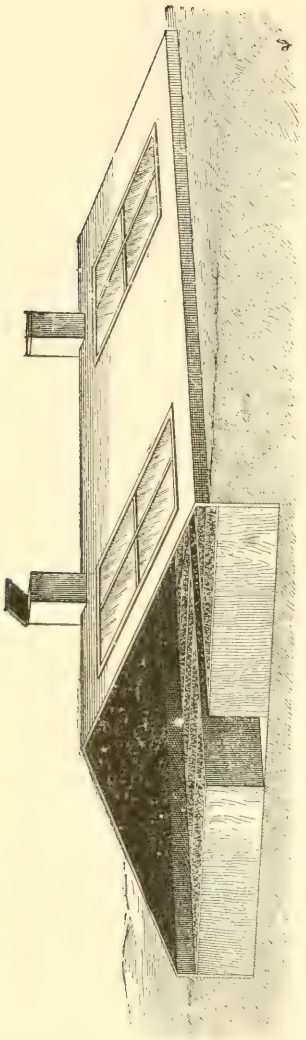
Some growers contend that wide beds of six rows heat in their centers in a mild winter and therefore, make them of three or four rows. We see no difference in their keeping. Such winters are unfavorable to the best preservation of this crop in any kind of bed, shed or trench, and some loss is inevitable unless stored with the most careful attention to ventilation and light covering. Since loss in a mild season is a contingency to be counted on and these narrow beds are wasteful of covering, we hold to our original number of rows. Others deem it economical to place triple instead of double rows in the two outside banks of a bed, since heating is not probable in this most exposed position, but in such thick rows all of the plants can not come in contact with the soil and imperfect bleaching is the result.

To open these beds, take the litter off one end and if all has gone well, the frozen crust can be broken with a pickaxe or spade into large flakes, exposing the tops of the Celery almost as green and fresh as when put away. Shoveling away the loose bank, the stalks are easily lifted out in handfuls and carted to the bunching room. Care must always be taken to throw back the soil and litter on the broken end of the bed after taking out the day's supply

The above plan excels the old trench system, in that, perfectly green Celery can be bleached in these beds equally as well as in the rows banked in fall in the fields, only requiring a little more time. In a trench, perfectly green Celery never bleaches well. They answer for temporary storage of Celery already bleached, or for a few stalks saved for seed purposes which one wishes to keep as green as possible all winter; but they are not economical of labor, are infested with mice in winter and, in wet soils, the Celery is frequently ruined by standing water.

In the Spring these beds are easily leveled with the spade and harrow, and the litter scattered on all sides, and will make the most fertile spots in the field for succeeding crops.

There is another fair plan which answers well for holding bleached Celery for sales in early winter, and merits description for those who aim to make sale of their entire crop by January 1. It is the shed, or, as termed by the Kalamazoo growers, the "Coop" system. There are two methods for these according to the amount of Celery grown. For one made on the largest scale an excavation

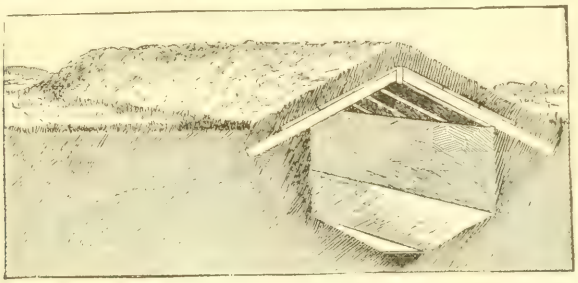


SHED OR "COOP" STORAGE.

is made fourteen feet wide, twenty inches deep and as long as is needed. Posts about four inches in diameter are set every four or five feet through the length of this pit close to its sides, these are for the walls and should be boarded up on both sides of the posts which leaves a hollow space to be filled with leaves or sawdust, or what is better yet, the inside of the inner boarding can be lined with tarred paper. Scantling are nailed on the tops of the posts as a plate upon which to rest the rafters which should be cut nine feet long. The roof should be made of good boards, covered with sheathing paper and then shingled, having spaces left for a few sashes to give light and ventilation in mild weather. For regular ventilation have wooden chimneys ten inches square every fourteen feet with covers for extreme cold weather. The ends should be boarded, papered and sided, with a window in the rear and a door and window in front; when very cold, shutters can be used to cover all the windows. In the center of the shed two parallel rows of boards about eighteen inches wide are set up on their sides and are nailed to posts, making an alley twenty inches wide running lengthwise of the shed; on the inner sides of these boards and on the walls of the shed, cleats should be nailed every eighteen inches that boards may be slipped in to separate the Celery

so that it may not be massed in too great bulk and also to keep it upright. Just before putting in the Celery, spade up the ground that the roots may readily take hold of and receive moisture from the loosened earth. Set the roots fairly on the ground and slip in the boards every eighteen inches until the shed is filled. If the Celery shows no signs of wilting, do not wet it as this is bad for any plants packed en masse; if moisture must be supplied, sprinkle the soil before putting in the Celery. In mild weather these sheds should be aired, the chimneys can remain open nearly all the time except in the coldest weather; if kept too warm, the leaves turn yellow and the plants are in danger of rotting.

The second plan for shed storing is a modification of the above, is cheaper built and is used for storing lesser quantities. A long trench-like pit is dug two feet deep, four feet wide and as long as

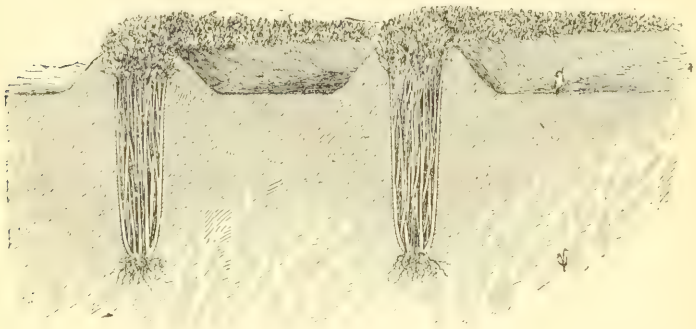


PIT STORAGE.

needed. There are no board walls and the rafters are dug into the tops of the side banks three feet apart and are nailed with ten-penny nails to a ridge-board making a secure framework on which to rest the boards for the roof, three of which twelve inches wide put on at right angles to the rafters, make one side of the roof. This is substantial enough to bear up a covering of six inches of sod or soil. Additional protection can be given later when colder weather sets in by spreading on litter. The boarded ends should be made secure by lining with sheathing paper and siding, and at one end should be a good door. Proper provision must also be made for light, ventilation and drainage from the lower end of the path, which is made as in the first shed by the setting up of parallel boards, only in this, they are but twelve inches apart, giving just space enough in which to stand when placing the Celery in the spaces between the boards

and the dirt sides of the pit. The path should be dug out one foot deeper than the floor of the pit which, with the head room at the peak, will allow passage by slight stooping. In this there are but two divisions of eighteen inches for the Celery, but in these sheds the rows run lengthwise instead of across as in the others. This latter plan is a very cheap one, since the gardener can use his boards which have done service in the field for bleaching for the roof and the sides of the inside alley, requiring as new material, only scantling for rafters and lumber for the ends of the shed. The low roof can easily be taken down and apart each season, the pit be filled and the space turned again to field purposes. Such a pit can be easily made in a side hill, which requires but little lumber for the back end, other arrangements being made as previously described.

There is a half-trench system, a modification and improvement on the old-fashioned trench, which does good service for storing small quantities of Celery and for stock to be kept over until May for seed raising. A dry spot in the garden is selected and in it a trench is dug two-thirds as deep as the Celery is high, the dirt



IMPROVED TRENCH STORAGE.

thrown out on either side, being used to further bank the Celery to its top, using care at first not to press the plants too closely together. Later this is covered with boards and litter, or litter alone after throwing an inch or two of dirt lightly over the tops. Before the dirt is thrown on, close the Celery a little tighter together than before, and before the litter is spread, allow this little dirt-covering to thoroughly freeze.

It is often convenient to store temporarily in the field that portion of the crop which can be sold prior to severe weather, which may be expeditiously done by standing two parallel rows of boards twelve inches apart centrally between two growing rows and filling the space between with the stalks placed upright, using the soil from the ridges on both sides to bank up to the tops of the boards, which are then lifted out and by a light covering of litter given to the rows, they are left sufficiently protected against moderate freezing and are easy to get out as needed for late fall sales.

For family use alone (which means small quantities) a cellar KEPT COOL is a good place for storage. Narrow boxes deeper than the Celery is high are used, in the bottoms of which at first is dry sand, enough to completely surround the fibres of the plants. Later the roots only are well watered and kept moist through the winter. Small holes near the bottoms of the boxes are bored for escape of excess of water, since Celery plants must not stand in saturated soil.

SHIPPING TRADE.

Bunched Celery when put up from sound stock and properly packed can be sent long distances and yet retain freshness for several days after it has been received at its destination. This facility of shipment has already made it an important article of domestic commerce and the quantity mentioned in another place as being distributed from one important point, partially indicates the great demand which exists in many parts of the country. To supply this demand many produce dealers find the handling of this item an important department of their business, several firms in this city [Chicago] shipping from five to eight thousand dozen weekly in the busy season. This is delivered to them directly from the growers at a fixed price instead of on consignment, the dealers in such cases of course selling it at prices something in advance of ordinary commission charges. This arrangement has proved to be the most satisfactory.

For those outside of large cities we favor dealing directly with the retailer or consumer, as consignments made to commission men sometimes yield but little profit. Our experience has given us cause for grudge against certain commission dealers who rapaciously take stock, boxes and all, and modestly send in a bill for transportation, yet we are too fair to make sweeping charges against the whole

class which contains many honest and reliable men. If you are at a railroad point, secure the addresses of all grocers, fish and oyster dealers hotel and restaurant people at every town along your line and its connections, within reasonable shipping distance and mail to each a circular describing quality and prices of your stock, with a promise of prompt and regular delivery of standing orders. Express companies will generally co-operate with enterprising growers by offering lowest rates for transportation and other advantages which will enable them to compete with shippers from more remote points, that they may successfully control the trade nearer home. It will be recognized by all, that best stock, neat packages, an attractive brand and prompt shipments to those depending upon regular supplies, make and hold trade. If starting in a small way, secure your own town and two or three others near at hand; later as your stock and facilities increase, extend your borders, even to remote sections if possible. Addresses are easily secured from directories, or local express agents who cheerfully furnish them to those who propose shipping over their lines, or are engaging in business enterprises that involve the workings of the whole country. Commercial agencies furnish lists of all branches of trade and information as to responsibility and credit.

The season of trade lasts from August to April, being most active as before stated, during the holidays and the best prices are obtained for the earliest and latest stocks, though the demand for the former is much less than for the latter. The most regular and steady demand commences after the holidays and continues as long as stock can be kept.

FOR SOUTHERN GROWERS.

Everything so far written for this Manual, has been with reference to the Northern Section, so far as dates of operations and certain local practices are concerned, but lying outside of the details of cultivation and storage which are equally adapted to all sections are some special points which require separate mention for the different conditions of the South, as regards climate and length of season. In that section they now buy nearly all their stock of winter Celery from the North, which arrives none the better for the long journey, and its cost largely increased by high transportation charges. This condition

exists because of unfortunate results from using our time of planting when the season with them is so hot and dry. Failure is sure to follow from June and July plantings, yet we know as good crops can be grown in the extreme South and especially in the Atlantic coast territory from North Carolina to Florida as are grown in the North. We have seen there, soils of similar formation to those of our own where Celery thrives best, not the only requirement to be sure, but in a late trip through different portions of the South, we have seen a few instances of success where right seasons of planting and proper intelligent methods have been used. These we will endeavor to outline.

The Celery crop requires from three to three and one-half months of growth before storage. Our advice would be to plant September 1 to 15 when the drouthy and hot period has passed; from that time to December 1 to 25 there will be sufficient time in which to mature the crop, with similar weather to ours in October and the early part of November. This question of planting and temperature during growth has been the obstacle preventing wider culture in that section. Our suggestion as to time would bring the harvest close to the holidays when the greatest demand begins, and enterprising growers would reap large benefits from having fresh stock at hand for local demand which would more than compete with shipped-in lots loaded with costly express charges. The same ground on which tomatoes and sweet potatoes have been grown can be used for the September planting of Celery and even in the case of a late crop of sweet potatoes left undug, the vines can be lifted upon the ridges out of the way, and the plants set between, just as we do in our system of double-cropping. This involves the purchase of plants from Northern sections, since as we have already stated, at the season of the year to produce plants ready to set in September, the arid temperature and burning soil defeat the purpose. Our Southern friends, however, can well afford this interchange, as their surplus product could be marketed in Northern cities in February and March just when our supply is waning and the prices are highest.

Winter storage is a matter of small expense at the South, the temporary plan for storing between the ridges explained elsewhere, answering well for storing for a short season, but as a more permanent plan we recommend a modification of our bed system for this purpose.

Take one of the growing rows for a starting point, cut down its banks, store two rows each side of this ridge, making five rows when finished. In localities like Charleston and Savannah rarely more is required than a covering of soil, in still warmer sections, the rows completely banked to their tops will stand safely until used. This is no theoretical plan, but a working one. Try it and in a few years we prophesy, the southland will be dotted with Celery gardens and another industry will be added to the growing list of that delightful portion of our country.

PROFITS.

It is not fitting that we should conclude this subject without reference to this important part of our whole enterprise and the object of all our labors ; but we will at the outset, promise avoidance of delusive figuring and present only a conservative statement of the income generally derived from this crop when grown on a large scale. The beginner only, and not the experienced grower would take the highest number of plants which may be raised on an acre and estimate his gross receipts by multiplying by the maximum price at which it has been sold, neither would a mathematically correct table of the number of plants per acre, at given distances apart, accurately represent the number grown, as there are always some misses, and a portion of the plants under average culture, sometimes are too small to be salable at standard prices ; therefore we will consider as the basis of our computation, 28,000 plants per acre for a single crop, and the mean wholesale price at which it has been sold in this market for the past three years, viz : twenty-five cents per dozen. We are confident that actual results will confirm this basis. If there will be any variation, we prefer it to show on the favorable side of our account :

ACCOUNT WITH PLOT OF ONE ACRE, SINGLE AND DOUBLE CROP.

	Am't Dr.	Am't Cr.
2,300 Dozen Celery at 25 cents per dozen		$575.00
Half year's rent of land	$ 20.00	
Half cost of fertilizers	50.00	
One-quarter pound of seed	1.00	
Plowing and cultivating	20.00	
Hand labor	225.00	
Wear and tear of tools	5 00	
Cartage and selling	40 00	$361.00
Net profit per acre, single crop		$214.00
		2
Net profit per acre, double crop		$428.00

Practically the profit on the second crop is proportionately greater than when only the first is grown. As will be seen, the most expensive item in the foregoing is for hand labor, viz: transplanting, hoeing, banking and storing, much of which can be economized when two crops are grown and the first one sold from the field, without expense of storing, and it is within bounds to state in round numbers, a net profit per acre from the two crops, of five hundred dollars and proportionately more in interior towns where better prices are always obtained. The grower who owns his land, and does his own work, should also consider the amount allowed for rent of land and hand labor, our figures being based upon experience here, where land is mostly leased at a high rental and hired labor does the entire manual work of cultivation, etc., the proprietor generally attending to marketing, shipping and general supervision where a number of acres are grown. There are instances where an extra brand is produced and a good reputation is established with special customers, that higher prices are realized;—numbers of growers here in some seasons make eight hundred to one thousand dollars per acre,—but the estimate we have given is nearer the average standard of profit, and seems so satisfactory that culture is increasing and planters are prosperous.

OUR CELERY SEED.

We Can Offer Fresh and Reliable Stocks, for the Market Gardener and Carry the following:

List of Varieties.

Giant Golden Heart,	Golden Self-Blanching,
Dwarf Golden Heart,	Nellis' Self-Blanching,
Perfection Heartwell,	New Ivory Solid,
Crawford's Half Dwarf,	New Rose,
Dwarf White Solid,	Red Giant Solid,
Early Arlington,	Carter's Crimson,
Boston Market,	Turnip Rooted,
New Early Market,	Turnip Rooted Apple Shaped,
White Plume,	Large Smooth Prague (new).

CELERY PLANT LIST READY IN JUNE.

VAUGHAN'S SEED STORE,

88 STATE AND 146 & 148 W. WASHINGTON ST.

CHICAGO.

Vaughan's Seed Store

CHICAGO.